Claim Amendments

Please amend claims 1, 3, 5-9, 11-13, and 20 as follows:

Please cancel claims 2, 4, and 14-19 as follows:

Please add new claims 21 - 31 as follows:

Claims as Amended

1. (currently amended) A method for semiconductor device feature development using a bi-layer photoresist to improve an etching resolution and reduce particulate contamination comprising the steps of:

providing an unpatterned non-silicon containing ~~photoresist layer~~ organic resinous layer over a substrate to from a first resist layer;

providing a silicon containing photoresist layer over the ~~non-silicon containing photoresist~~ first resist layer to form a second resist layer;

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exposing an exposure surface of the second resist layer ~~silicon containing photoresist layer~~ to an activating light source ~~said exposure surface defined by an overlying pattern according to a photolithographic~~ and wet developing ~~process~~ the second resist layer to form a second resist layer pattern revealing first resist layer portions; and,

~~developing the silicon containing photoresist layer according to a photolithographic process to reveal a portion the non-silicon containing photoresist layer; and~~

dry developing said ~~non-silicon containing photoresist~~ first resist layer portions according to the second resist layer pattern to reveal the substrate in a plasma ~~reactor by igniting a plasma from an ambient mixture including at least~~ process comprising supplying nitrogen and oxygen plasma forming gases to form a dry development plasma.

2. cancelled

3. (currently amended) The method of claim 1, wherein the ~~non-silicon containing photoresist~~ the first resist layer comprises a non-photoactive polymer.

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4. cancelled.

5. (currently amended) The method of claim 1, wherein the activating light source ~~has~~ comprises a wavelength ~~of one of~~ selected from the group consisting of about 157 nanometers and about 193 nanometers.

6. (currently amended) The method of claim 1, wherein the ~~non-~~

~~silicon containing photoresist~~ first resist layer has a thickness greater than the ~~silicon containing photoresist~~ second resist layer.

7. (currently amended) The method of claim 6, wherein the ~~non-silicon containing photoresist~~ first resist layer has a thickness of about 1000 Angstroms to about 5000 Angstroms and the ~~silicon containing photoresist~~ second resist layer has a thickness of about 500 Angstroms to about 3000 Angstroms.

8. (currently amended) The method of claim ~~2~~ 1, further comprising the step of removing the ~~silicon containing photoresist~~ second resist layer according to a first in-situ ashing process following the step ~~including~~ of dry developing.

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9. (currently amended) The method of claim 8, wherein the first in-situ ashing process ~~includes igniting~~ comprises an oxygen containing plasma said oxygen containing plasma further ~~including~~ comprising at least one of nitrogen and fluorine ions said oxygen containing plasma ~~being optimized~~ to simultaneously clean plasma contact surfaces.

10. (original) The method of claim 8, further comprising the step of etching a semiconductor feature through at least a

portion of the substrate according to a reactive ion etch process.

11. (currently amended) The method of claim 10, wherein the semiconductor feature ~~includes at least one of~~ <u>is selected from the group consisting of</u> a via hole, a trench line, a contact hole, a shallow trench isolation feature, and a polysilicon gate feature.

12. (currently amended) The method of claim 10, further comprising the step of removing the ~~non-silicon containing photoresist~~ <u>first resist</u> layer according to a second in-situ ashing process <u>following the step of etching</u>.

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13. (currently amended) The method of claim 12, wherein the second in-situ ashing process further ~~includes igniting~~ <u>comprises</u> an oxygen containing plasma further ~~including~~ <u>comprising</u> at least one of nitrogen and fluorine, the oxygen containing plasma ~~being optimized~~ to simultaneously clean plasma contact surfaces.

14. - 19. cancelled

20. (currently amended) The method of claim 12, wherein the steps ~~including~~ <u>of</u> dry developing, the first in-situ ashing process, the reactive ion etch process, <u>and</u> the second in-situ-

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ashing process, ~~and the in-situ cleaning process~~ are carried out ~~in the plasma reactor~~ according to a continuous process.

21. (new) The method of claim 1, wherein the dry development plasma is formed of plasma forming gases consisting essentially of nitrogen and oxygen.

22. (new) The method of claim 1, wherein the dry development plasma is formed of plasma forming gases consisting essentially of nitrogen, oxygen, and argon.

23. (new) The method of claim 1, wherein the first resist layer is selected from the group consisting of an I-line photoresist, an acrylic polymer, and a polyvinyl alcohol polymer.

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24. (new) The method of claim 1, wherein the second resist layer comprises a DUV photoresist wherein the silicon comprises silicon incorporated from one of a silylation process and from silicon monomers included in the photoresist.

25. (new) A method for etching a semiconductor device feature using a bi-layer photoresist to improve an etching resolution and reduce particulate contamination comprising the steps of:

providing a non-silicon containing organic resinous layer

over a dielectric insulating layer to from a first resist layer;

providing a silicon containing photoresist layer over the first resist layer to form a second resist layer;

patterning the second resist layer according to a photolithographic exposure process comprising a wavelength less than or equal to about 193 nm;

wet developing the second resist layer to form a patterned second resist layer;

dry etching according to a dry etching chemistry formed by supplying gases consisting essentially of nitrogen, oxygen, and optionally, argon, the first resist layer portions to reveal the dielectric insulating layer to form an etching mask; and,

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etching an opening in the dielectric insulating layer.

26. (new) The method of claim 25, wherein the second resist layer is removed in-situ according to an oxygen ashing process prior to the step of etching.

27. (new) The method of claim 26, wherein one of fluorine and nitrogen is added during the oxygen ashing process to simultaneously clean plasma contact surfaces including a plasma reactor chamber contact surface.

28. (new) The method of claim 25, wherein at least the first and second resist layers are removed in-situ according to an oxygen ashing process following the step of etching.

29. (new) The method of claim 27, wherein one of fluorine and nitrogen is added during the oxygen ashing process to simultaneously clean plasma reactor chamber surfaces.

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30. (new) The method of claim 25, wherein the first resist layer is selected from the group consisting of an I-line photoresist, an acrylic polymer, and a polyvinyl alcohol polymer.

31. (new) The method of claim 25, wherein the second resist layer comprises a DUV photoresist wherein the silicon comprises silicon incorporated from one of a silylation process and from silicon monomers contained within the photoresist.